26-Port 10/100/1000Mbps
Gigabit & Fast Ethernet Switch
2 × 1000BASE plus
24 × 10/100BASE ports

User Guide

AirLink+

ASW-2402

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FCC Warning

This equipment has been tested and found to comply with the regulations for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

VCCI Warning

This is a product of VCCI Class A Compliance.

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UL Warning

a) Elevated Operating Ambient Temperature- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

b) Reduced Air Flow- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical Loading- Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing- Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

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About This Guide

Congratulations on your purchase of the 26-Port 10/100/1000Mbps Gigabit & Ethernet Switch with 2 x 1000BASE-T plus 24 x 10/100BASE-TX ports. This device integrates Gigabit, 100Mbps Fast Ethernet, and 10Mbps Ethernet network capabilities in a highly flexible package.

Purpose

This guide discusses how to install your 26-Port 10/100/1000Mbps Gigabit & Ethernet Switch with 2 x 1000BASE-T plus 24 x 10/100BASE-TX ports.

Terms/Usage

In this guide, the term "**Switch**" (first letter upper case) refers to your 26-Port 10/100/1000Mbps Gigabit & Ethernet Switch with 2 x 1000BASE-T plus 24 x 10/100BASE-TX ports, and "**switch**" (first letter lower case) refers to other Ethernet switches.

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Introduction

This chapter describes the features of the Switch and some background information about Ethernet/Fast Ethernet/Gigabit Ethernet switching technology.

Fast Ethernet Technology

The growing importance of LANs and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies have been proposed to provide greater bandwidth and improve client/server response times. Among them, 100BASE-T (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology. The non-disruptive and smooth evolution nature, and the dominating potential market base, virtually guarantee cost-effective and high performance Fast Ethernet solutions.

100Mbps Fast Ethernet is a standard specified by the IEEE 802.3 LAN committee. It is an extension of the 10Mbps Ethernet standard with the ability to transmit and receive data at 100Mbps, while maintaining the CSMA/CD Ethernet protocol. Since the 100Mbps Fast Ethernet is compatible with all other 10Mbps Ethernet environments, it provides a straightforward upgrade and takes advantage of the existing investment in hardware, software, and personnel training.

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Gigabit Ethernet Technology

Gigabit Ethernet is an extension of IEEE 802.3 Ethernet utilizing the same packet structure, format, and support for CSMA/CD protocol, full duplex, flow control, and management objects, but with a tenfold increase in theoretical throughput over 100-Mbps Fast Ethernet and a hundredfold increase over 10-Mbps Ethernet. Since it is compatible with all 10-Mbps and 100-Mbps Ethernet environments, Gigabit Ethernet provides a straightforward upgrade without wasting a company's existing investment in hardware, software, and trained personnel.

The increased speed and extra bandwidth offered by Gigabit Ethernet are essential to coping with the network bottlenecks that frequently develop as computers and their busses get faster and more users using applications that generate more traffic. Upgrading key components, such as your backbone and servers to Gigabit Ethernet can greatly improve network response times as well as significantly speed up the traffic between your subnets.

Gigabit Ethernet supports video conferencing, complex imaging, and similar data-intensive applications. Likewise, since data transfers occur 10 times faster than Fast Ethernet, servers outfitted with Gigabit Ethernet NIC's are able to perform 10 times the number of operations in the same amount of time.

The phenomenal bandwidth delivered by Gigabit Ethernet was the most cost-effective method to take advantage of today's rapidly improving switching and routing internetworking technologies. And with expected advances in silicon technology and digital signal processing that enabled Gigabit Ethernet to eventually operate over unshielded twisted-pair (UTP) cabling, outfitting your network with a powerful 1000-Mbps-capable backbone/server connection creates a flexible foundation for the next generation of network technology products.

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Switching Technology

Another approach to pushing beyond the limits of Ethernet technology is the development of switching technology. A switch bridges Ethernet packets at the MAC address level of the Ethernet protocol transmitting among connected Ethernet or Fast Ethernet LAN segments.

Switching is a cost-effective way of increasing the total network capacity available to users on a local area network. A switch increases capacity and decreases network loading by dividing a local area network into different segments, which don't compete with each other for network transmission capacity.

The switch acts as a high-speed selective bridge between the individual segments. The switch, without interfering with any other segments, automatically forwards traffic that needs to go from one segment to another. By doing this the total network capacity is multiplied, while still maintaining the same network cabling and adapter cards.

Switching LAN technology is a marked improvement over the previous generation of network bridges, which were characterized by higher latencies. Routers have also been used to segment local area networks, but the cost of a router, the setup and maintenance required make routers relatively impractical. Today switches are an ideal solution to most kinds of local area network congestion problems.

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Features

- ✓ **24×10/100BASE-TX Fast Ethernet ports + 2×1000BASE-T Gigabit Ethernet ports**
- ✓ **Auto MDI-X for each port**
- ✓ **Full/half duplex transfer mode for 10/100Mbps Fast Ethernet ports**
- ✓ **Full duplex transfer mode for Gigabit Ethernet ports**
- ✓ **Wire speed reception and transmission**
- ✓ **Store-and-Forward switching method**
- ✓ **Integrated address Look-Up Engine, supports 8K MAC addresses**
- ✓ **Supports 2.5Mbit RAM for data buffering**
- ✓ **Extensive front-panel diagnostic LEDs**
- ✓ **IEEE 802.3x flow control for full-duplex**
- ✓ **Back pressure flow control for half-duplex**
- ✓ **Standard 19" Rack-mount size**

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Unpacking and Installation

This chapter provides unpacking and installation information for the Switch. To avoid causing any damage to the Switch, we recommend that you read this chapter carefully before starting installation.

Unpacking

Open the shipping carton of the Switch and carefully unpack the items inside. The carton should contain the following items:

- ✓ **One 26-Port 10/100/1000Mbps Gigabit & Ethernet Switch**
- ✓ **One AC power cord, suitable for your area's electrical power connections**
- ✓ **Four rubber feet to be used for shock cushioning**
- ✓ **Screws and two mounting brackets**
- ✓ **User's Guide**

If any item is found missing or damaged, please contact your local reseller for replacement.

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Installation

The site where you place the Switch may greatly affect its performance. When installing, take the following into your consideration:

- ✓ **Install the Switch in a fairly cool and dry place. See *Technical Specifications* for the acceptable temperature and humidity operating ranges.**
- ✓ **Install the Switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.**
- ✓ **Leave at least 10cm of space at the front and rear of the hub for ventilation.**
- ✓ **Install the Switch on a sturdy, level surface that can support its weight, or in an EIA standard-size equipment rack. For information on rack installation, see the next section, *Rack Mounting*.**
- ✓ **When installing the Switch on a level surface, attach the rubber feet to the bottom of each device. The rubber feet cushion the hub and protect the hub case from scratching.**

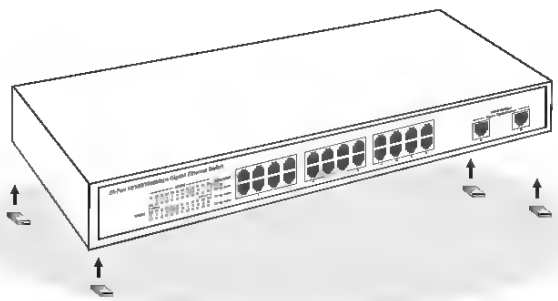

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Figure 1. Attach the adhesive rubber pads to the bottom

Rack Mounting

The Switch can be mounted in an EIA standard-size, 19-inch rack, which can be placed in a wiring closet with other equipments. Attach the mounting brackets to both sides of the Switch (one at each side), and secure them with the provided screws.

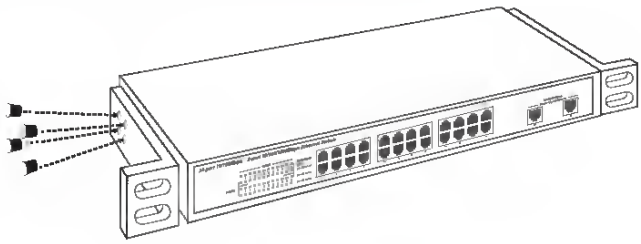

Figure 2. Combine the Switch with the provided screws

Then, use screws provided with the equipment rack to mount the Switch in the rack.

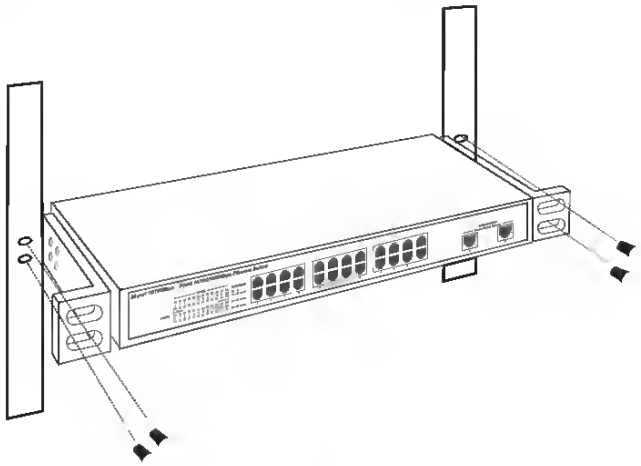

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Figure 3. Mount the Switch in the rack

Connecting Network Cable

The Switch supports 10/100/1000Mbps Gigabit Ethernet. It runs full/half duplex transfer mode for 10/100Mbps and full duplex transfer mode for 1000Mbps.

These ports are Auto-MDI type port. The Switch can auto transform to MDI-II or MDI-X type, so you can just make an easy connection that without worrying if you are using a standard or crossover cable.

AC Power

The Switch can be used with AC power supply 100-240VAC, 50-60 Hz. The power switch is located at the rear of the unit adjacent to the AC power connector and the system fan. The switch's power supply will adjust to the local power source automatically and may be turned on without having any or all LAN segment cables connected.

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Identifying External Components

This chapter identifies all the major external components of the Switch. Both the front and rear panels are shown below, with a description of each panel features.

Front Panel

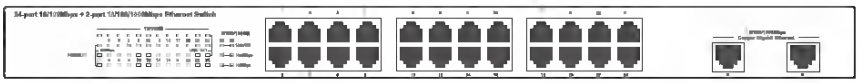

Figure 4. The front panel of the Switch

✓ **LED Indicators**

Refer to the next chapter *Understanding LED Indicators* for detailed information on the meaning of each LED indicator.

✓ **10/100BASE-TX Twisted-Pair Ports (Port1~24)**

These ports supports network speeds of either 10Mbps or 100Mbps, and can operate in half- and full- duplex transfer modes. These ports also supports automatic MDI/MDI-X crossover detection function gives true "plug and play" capability, just need to plug-in the network cable to the hub directly and no need to care if the end node is NIC (Network Interface Card) or switches and hubs.

✓ **1000BASE-T Twisted Pair Ports (Port 25~26)**

The Switch is equipped with two Gigabit twisted pair ports, supported auto negotiable 10/100/1000Mbps and auto MDI/MDIX crossover detection function. These two ports can operate in half- and full- duplex modes.

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Rear Panel

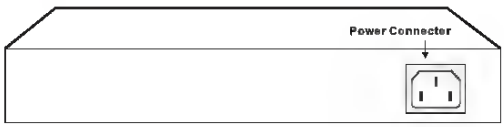

Figure 5. The rear panel of the Switch

✓C Power Connector

This is a three-pronged connector that supports the power cord. Plug in the female connector of the provided power cord into this connector, and the male into a power outlet. Supported input voltages range from 100-240V AC at 50-60Hz.

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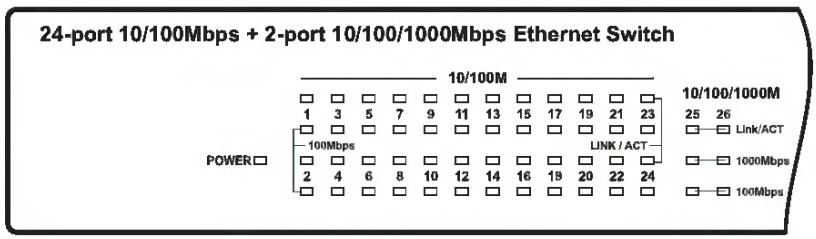
Understanding LED Indicators

The front panel LEDs provides instant status feedback, and, helps monitor and troubleshoot when needed.



Power LED

✓ POWER

On : When the Power LED lights on, the Switch is receiving power.

Off : When the Power LED turns off or the power cord has improper connection.

Ports 1~24 Status LEDs

✓ LINK/ACT

On : When the LED lights on, the respective port is connected to the 10/100Mbps Ethernet network.

Blinking : When the LED is blinking, the port is transmitting or receiving data on the 10/100Mbps Ethernet network.

Off : No link.

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✓ **100Mbps**

On : When the LED lights on, the respective port is connected to a 100Mbps Ethernet network.

Off : The respective port is connected to a 10Mbps Ethernet network, or no link

Port 25 & Port 26 Status LEDs

✓ **LINK/ACT**

On : When the LED lights on, the respective port is connected to a 10/100/1000Mbps Ethernet network.

Blinking : When the LED is blinking, the respective port is transferring or receiving data on a 10/100/1000Mbps Ethernet network.

Off : No link.

✓ **1000Mbps**

On : When the LED lights on, the respective port is connected to a Gigabit Ethernet network.

Off : The respective port is connected to a 10/100Mbps Ethernet network, or no link.

✓ **100Mbps**

On : When the LED lights on, the respective port is connected to a 100Mbps Fast Ethernet network.

Off : The respective port is connected to a 10Mbps or Gigabit Ethernet network, otherwise, no link.

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Technical Specifications

General	
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100 BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet
Protocol	CSMA/CD
Data Transfer Rate	Ethernet: 10Mbps (half duplex), 20Mbps (full duplex) Fast Ethernet: 100Mbps (half duplex), 200Mbps (full duplex) Gigabit Ethernet: 2000Mbps (full duplex)
Topology	Star
Network Cables	10BASET: 2-pair UTP Cat. 3,4,5; up to 100m 100BASE-TX: 2-pair UTP Cat. 5; up to 100m 1000BASE-T: 4-pair UTP Cat. 5; up to 100m (Cat. 5E is recommended)
Number of Ports	24 ×10/100BASE-TX Auto-MDIX UTP ports 2 × 1000BASE-T Auto-MDIX UTP ports
Physical and Environmental	
AC inputs:	100 to 240V AC, 50/60 Hz internal universal power supply
Power Consumption:	11.75 watts. (max.)
Temperature:	Operating: 0 ~40 C, Storage: -10 ~70 C
Humidity:	Operating: 10%~90%, Storage: 5%~90%
Dimensions:	440× 140 × 44 mm (W × H × D)
Emissions:	FCC Class A, CE Mark Class A, VCCI Class A
Safety:	cUL(UL60950), CB(IEC60950)
Performance	
Transmits Method:	Store-and-forward
RAM Buffer:	2.5Mbit per device
Filtering Address Table:	8K entries per device
Packet Filtering/Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps 1000Mbps Gigabit Ethernet: 1488,000/pps
MAC Address Learning:	Automatic update

Technical Support

E-mail: support@airlinkplus.com

Toll Free: 1-888-746-3238

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